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Alexander S. Konstantinov

Igor K. Lopatin

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**REVIEW OF THE *LONGITARSUS ASPERIFOLIARUM* GROUP OF SPECIES
(COLEOPTERA: CHRYSOMELIDAE: ALTICINAE)**

ALEXANDER S. KONSTANTINOV
Systematic Entomology Laboratory
USDA/ARS/PSI

% U.S. National Museum of Natural History, MRC-168
Washington, D.C. 20560 U.S.A.
e-mail: akonstan@sel.barc.usda.gov

AND

IGOR K. LOPATIN
Department of Zoology
Byelorussian State University
220080 Minsk, BELARUS

Abstract

The *Longitarsus asperifoliarum* species group is reviewed. Four new species are described: *L. hissaricus* Lopatin, **new species** (Tadzhikistan), *L. marguzoricus* Konstantinov, **new species** (Tadzhikistan), *L. tishechkini* Konstantinov, **new species** (Kazakhstan), and *L. violentoides* Konstantinov, **new species** (Armenia). *Longitarsus afghanicus* Lopatin is elevated to species status from its former status as *L. asperifoliarum afghanicus*. A key to the species and diagnostic characters for the group are provided. The setation of the apical and preapical abdominal tergites of females is recognized as a novel source of characters. Host plant and distributional data are included.

Longitarsus Latreille is the largest flea beetle genus; more than 700 species names are available worldwide. The Palearctic catalog of this genus recognizes more than 250 species (Heikertinger and Csiki 1939). A recently published list of Palearctic species described after 1939 contains 110 additional names (Gruev 1995). The majority of species of *Longitarsus*, in both larval and adult stages, are polyphagous, feeding on plants in several different families. Food plants of *Longitarsus* include some of the most important noxious weeds in the United States, and at least 3 species of *Longitarsus* have been released in North America as biological control agents of weeds. This paper treats a small group of southern Palearctic species that can be separated from the other *Longitarsus* species by the combination of the following characters: (1) the posterolateral callosities of the pronotum are poorly developed (low and wide) and do not form appendages as they do in all other species of *Longitarsus* and many other alticine genera (e.g., *Aphthona* Chevrolat); (2) the pronotum and elytra are dark brown or black with strong metallic green, bronze, or brass reflection; (3) the metafemora are black with metallic reflection; (4) the pro- and mesofemora are dark brown or reddish brown at least basally; (5) the tibiae are light brown; (6) the metatibiae are straight in lateral view, slightly widening apically; (7) the second antennomere is longer than the third and as long as the fourth; (8) the vertex is strongly shagreened; and (9) the median ridge of the metatibia is developed only in front of the apex. Weise (1887) suggested separating this group from the other species of *Longitarsus* by the

metallic reflection of the elytra. Later he distinguished *L. asperifoliarum* Weise and *L. violentus* Weise by the size and density of elytral punctures (Weise 1893). However, we found the latter character to be of little diagnostic value because of its intraspecific variability.

Material recently collected in the Caucasus and Middle Asia has revealed four new species and a new status for *L. asperifoliarum afghanicus* Lopatin.

The following are abbreviations for the collections: **AKPC** Konstantinov Collection, Rockville, Maryland, U.S.A.; **HNHM** Museum of Natural History, Budapest, Hungary; **ILPC** Lopatin collection, Minsk, Belarus; **IZEA** Institute of Zoology, Yerevan, Armenia; **USNM** National Museum of Natural History, Washington, D.C., U.S.A.; **ZMHU** Zoologische Staatssammlung, Humboldt University, Berlin, Germany; **ZMAS** Zoological Institute of Russian Academy of Sciences, St. Petersburg, Russia; **ZMBU** Zoological Museum of Byelorussian University, Minsk, Belarus.

Longitarsus afghanicus Lopatin, **new status**

Figs. 31–32

Longitarsus asperifoliarum afghanicus Lopatin 1963:366 (Type locality: NE Afghanistan, Nuristan, Bashgultal valley. Holotype in HNHM).

Distribution. Afghanistan (Lopatin 1963).

Description. Body slightly convex. Length 1.74 mm, width 0.88 mm. Color dark brown with dark bronze reflection. Base of antennomere 1 and antennomeres 6–11 light brown, antennomeres 2–5 yellow. Metafemora dark brown with bronze reflection. Pro- and mesofemora reddish brown. Tibiae yellow. Vertex strongly covered with transverse wrinkles, with well-developed supraorbital puncture above orbital sulcus surrounded by few deep punctures. Antennal callus poorly developed, not higher than vertex, delineated from vertex by shallow, extremely fine groove. Surface of antennal callus moderately shiny, lacking sculpture. Midfrontal and suprafrontal sulci absent. Frontal ridge high, convex in lateral view, narrow, much wider dorsally (forming sharp edge in front of anterofrontal ridge). Anterofrontal ridge thick, much thicker than but as high as frontal ridge, attached to end of frontal ridge. Second antennomere slightly longer than third, as long as fourth. Pronotum length/width ratio 1.26–1.27, slightly wider basally. Lateral side convex, without denticle in front of middle, maximum width nearly in middle. Anterolateral callosity well developed, slightly lower anteriorly. Lateral margin narrowly explanated, explanations wider apically. Posterolateral callosity poorly developed, low, wide. Punctures round, deep, well defined, 2.0–2.5 times as large as interspaces¹. Interspaces slightly shagreened. Scutellum widely rounded on top. Elytron usually with well-developed humeral callus, maximum width behind middle. Apex broadly rounded with well developed angle. Punctures as large as pronotal, their diameter 2.0–2.5 times greater than distance between them. Interspaces shiny, without sculpture. Male metatibia curved in dorsal view. First metatarsomere of male 1.14 times longer than rest of tarsomeres together. Second metatarsomere of male as long as fourth and 1.57 times longer than third. Metatibial spur smaller than third metatarsomere. Tarsal claw thin, lacking denticle. Median lobe of aedeagus constricted in middle with deep, wide, par-

¹ The diameter of the punctures is described as seen through a light dissecting microscope, not as they appear in the SEM micrographs.

allel sided ventral groove. Bottom of groove membranous, with several well developed longitudinal wrinkles. Apex ogival with acute denticle (Fig. 31).

Female unavailable for study.

Comments. This species was described as a subspecies of *L. asperifoliarum*. The best characters to separate it from *L. asperifoliarum* are the sculpture of the vertex (vertex is covered with wrinkles in the former and coarsely shagreened in the latter), the shape of the frontal ridge (much narrower in the former), the color of the legs and antennae (first antennomere with a darker base in the former), and the shape of the median lobe of the aedeagus (Figs. 31–32). It is apparent that these are species-level characters.

Type Material. Holotype ♂: NE AFGHANISTAN, Nuristan, Bashgultal Valley, 1100 m, 6.04.1953, J. Klapperich (HNHM). Paratype: the same data as holotype (1♂ ILPC).

Longitarsus asperifoliarum Weise

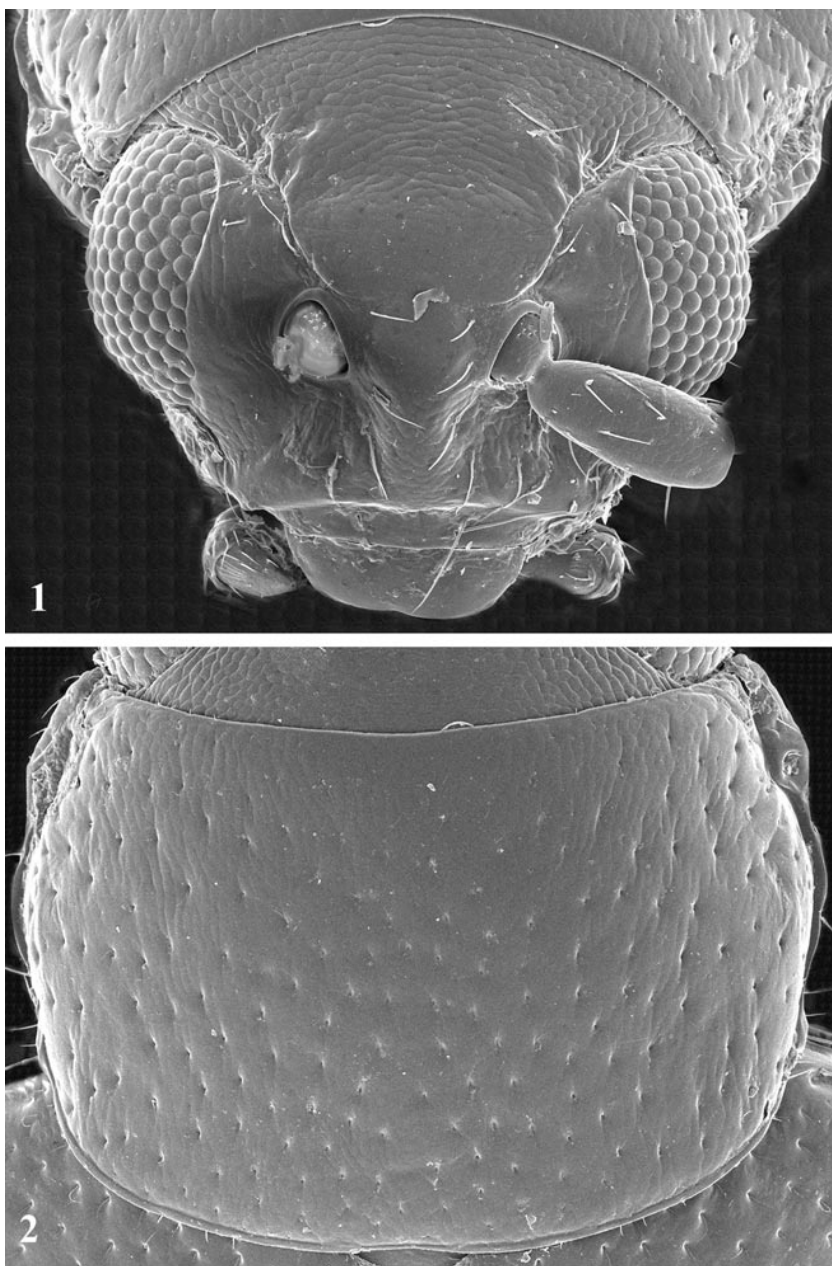
Figs. 1, 2, 7, 10, 13, 17, 18, 23, 27, 33–39

Longitarsus asperifoliarum Weise 1887:334 (Type locality: “Kyndyr-Tau,” West Tien Shan, environs of Tashkent, Uzbekistan. Depository of type specimens unknown). Jacobson 1893:246 (distribution, Middle Asia). Heikertinger 1914:258 (figures of ♂ genitalia, distinguishing features, distribution). Heikertinger and Csiki 1939:111 (Palearctic catalog). Lopatin 1977:212, 1984:322 (key, distribution, figures of ♂ genitalia, host plants). Gruev and Döberl 1997:150 (checklist, Palearctic)

Distribution. Turkmenistan (Heikertinger 1914), Kazakhstan, Kirgizia, North-West Afghanistan (Lopatin 1977, 1984), Uzbekistan (Nuratau) (Weise 1887, Jacobson 1893), (? A.K.) Caucasus (Gruev and Döberl 1997).

Host Plants. *Macrotomia* sp. (Lopatin 1977, 1984).

Description. Body slightly convex. Length 1.84–2.20 mm, width 0.90–1.02 mm. Color dark brown with strong bronze reflection. Antenna and leg brown-ferruginous, antennomeres 5–11 slightly darker. Metafemur dark brown with bronze reflection. Rest of legs reddish brown. Vertex strongly shagreened, with well developed supraorbital puncture above orbital sulcus surrounded by few deep punctures. Antennal callus poorly developed, not higher than vertex, delineated from vertex by shallow, extremely fine groove. Surface of antennal callus moderately shiny, lacking sculpture. Midfrontal and suprafrontal sulci absent. Frontal ridge high and convex in lateral view, moderately wide (distance between antennal sockets larger than diameter of antennal socket). Anterofrontal ridge attached to end of frontal ridge, in middle as high and thick as frontal ridge (Fig. 1). Second antennomere slightly longer than third, as long as fourth. Pronotum length/width ratio 1.47, slightly wider basally. Lateral side convex, forming oblique denticle nearly in middle, maximum width nearly in middle. Anterolateral callosity well developed, anteriorly slightly lower than posteriorly. Lateral margin narrowly explanated, explanations wider apically. Posterolateral callosity poorly developed, low, wide. Punctures elongate, deep, poorly defined, 1.5–2.0 times as large as interspaces. Interspaces slightly shagreened (Fig. 2). Scutellum widely rounded on top. Elytron usually with well developed humeral callus, maximum width behind middle. Apex narrowly rounded, without well developed angle (Fig. 7). Punctures as large as those on pronotum, their diameter slightly less than interpunctal distance. Interspaces minutely shagreened. Male metatibia curved in dorsal view. First metatarsomere of male 1.22 times longer than rest of tarsomeres together. Second me-



Figs. 1, 2. *Longitarsus asperifoliarum* Weise. 1) head, frontal view; 2) pronotum.

tatarsomere of male 1.33 times longer than fourth and 1.71 times longer third. Metatibial spur smaller than third metatarsomere. Tarsal claw thin, lacking denticle. Median lobe of aedeagus slightly constricted in front of middle with deep, wide ventral groove. Bottom of groove membranous, with several well developed longitudinal wrinkles. Apex widely rounded with moderately wide denticle (Figs. 33–39). Preapical abdominal tergite of female with few long setae medially. Distal half of preapical abdominal tergite sparsely covered with tiny microtrichia, basal half without pores (Fig. 13). Apical abdominal tergite covered with long setae. Few tiny microtrichia situated in middle and in lateral corners near spiracles (Fig. 13). Receptacle of spermatheca (Figs. 17–18) longer than pump. Inner and outer sides of receptacle convex. Vertical part of pump extremely short (lower part of horizontal portion of pump touches inner side of receptacle), well delineated from receptacle and from horizontal part of pump. Spermathecal duct basally at right angle to receptacle with no loop away from receptacle, apically with a few simple coils. Tignum slender, straight, slightly widening posteriorly (Fig. 23). Vaginal palpus slender, posteriorly slightly curved medially, broadly rounded at apex (Fig. 27). Apical sclerotization obtuse.

Variability. Shape and proportions of spermatheca vary significantly within the populations (Figs. 17–18). Specimens from Kazakhstan have antennal callosities as shagreened as basal part of vertex. General shape of median lobe and ventral grooves varies significantly (Figs. 33–39).

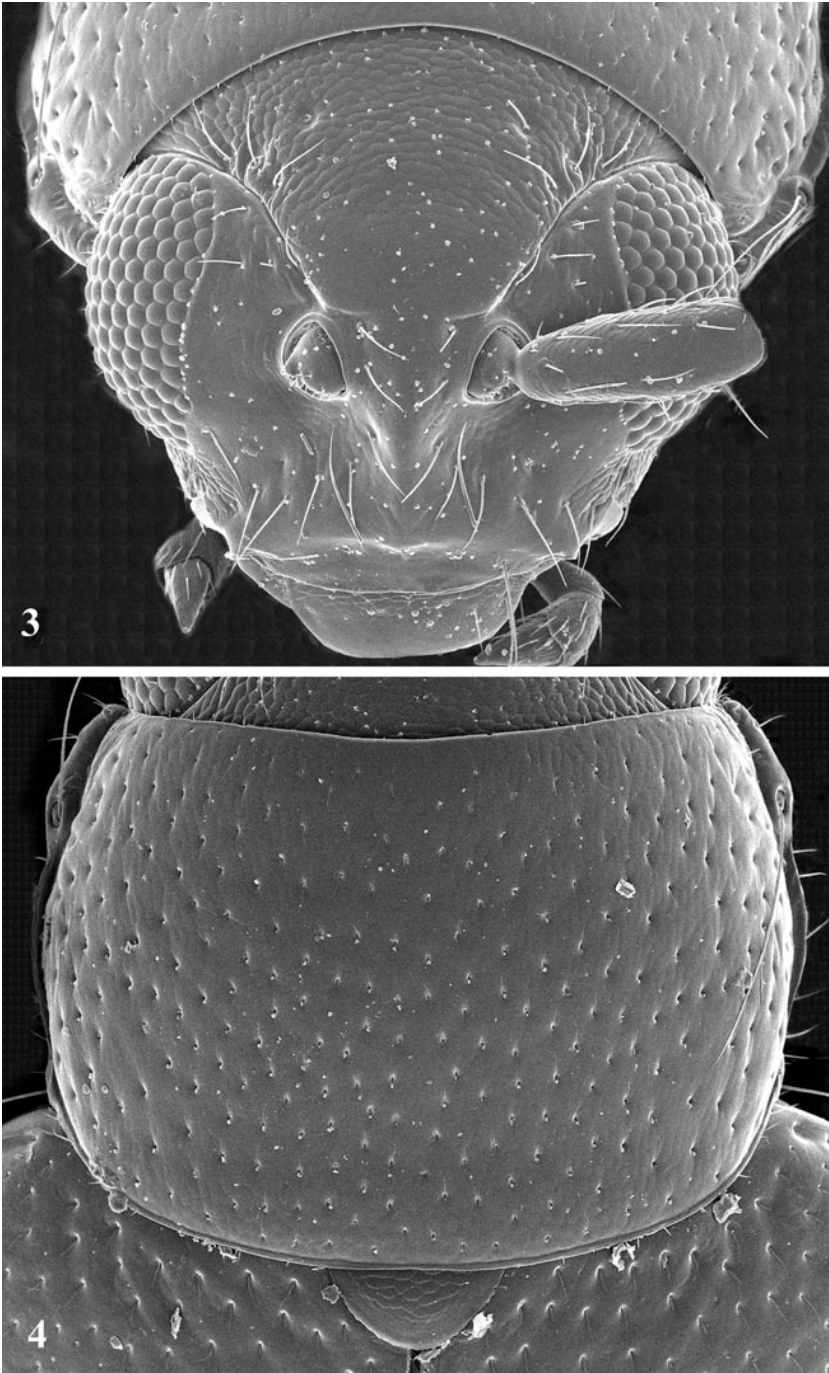
Comments. Weise (1887) compared this species with *L. fuscoaeneus* Redtenbacher. Based on specimens of *L. asperifoliarum* from “Tashkent (Staudinger, Reitter), Turkmenien (Reitter-Leder); and Bucharra (Staudinger)” Heikertinger (1914:259) provided figures of the male genitalia and discussed the differences between this species and *L. violentus* Weise. However, he did not mention whether he examined type specimens. In 1893 Jacobson described a new variation of *L. asperifoliarum* that he called *defectus* from Uzbekistan part of Zeravshan mountain ridge. He reported it as being smaller and lacking humeral calli. We were unable to find any specimens labeled as *defectus* in the collection of Zoological Institute (St. Petersburg).

Gruev and Döberl (1997) mistakenly interpreted the type locality of *L. asperifoliarum* as Altai Mountain. They also mentioned Caucasus as a part of this species range. However, it was described from West Tien Shan and was never collected outside of Middle Asia. Specimens from Tadzhikistan previously identified as *L. asperifoliarum* (Lopatin 1977, 1984) belong to *L. hissaricus*.

Material. Kazakhstan: Zhabyn, 10 km SSE s. Koktum, 8.VIII.1989, leg. S. Saluk (9 AKPC, 2 USNM); Aksu-Dzhabagly, Taldy-Bulak, 2000 m, 20.V.1990, leg. A. Konstantinov (8 AKPC, 3 USNM). **Uzbekistan:** West Tien Shan, Sidzhak, 13.V.1990, 1900 m, leg. A. Konstantinov (10 AKPC); West Tien Shan, 35 km E. Tashkent, Ak-Tash, 25.V.1989, leg. A. Konstantinov (5 AKPC, 2 USNM); Sary Chelek, Bakot valley, 19.V.1962, leg. V. Palij (4 AKPC, 3 USNM).

Longitarsus hissaricus Lopatin, **new species**
Figs. 3, 4, 8, 11, 40–42

Description. Body slightly convex. Length 1.90–2.04 mm, width 0.96–1.03 mm. Color dark brown with strong bronze reflection. Antenna and leg brown-ferruginous, antennomeres 5–11 slightly darker. Metafemur dark brown with



Figs. 3, 4. *Longitarsus hissaricus* Lopatin. **3)** head, frontal view; **4)** pronotum.

bronze reflection. Apices of pro- and mesofemora light brown. Rest of legs reddish brown. Vertex strongly shagreened, with well developed supraorbital puncture above orbital sulcus, surrounded by deep punctures. Antennal callus poorly developed, not higher than vertex, not delineated from vertex. Surface of antennal calli moderately shiny, lacking sculpture. Midfrontal and suprafrontal sulci absent. Frontal ridge high and convex in lateral view, moderately narrow. Anterofrontal ridge attached to end of frontal ridge, in middle as high and thick as frontal ridge (Fig. 3). Second antennomere slightly longer than third, as long as fourth. Pronotum width/length ratio 1.36, slightly wider basally. Lateral side convex, with oblique denticle, maximum width nearly in middle. Anterolateral callosity well developed, slightly lower anteriorly. Lateral margin narrowly explanated, explanations wider apically. Posterolateral callosity low, wide. Punctures elongate, deep, poorly defined, 1.5–2.0 times as large as interspaces. Interspaces covered with small, longitudinal wrinkles (Fig. 4). Scutellum widely rounded on top. Elytron usually with poorly developed humeral callus; maximum width behind middle. Apex broadly rounded with well developed denticle (Fig. 8). Punctures as large or slightly larger than those on pronotum, their diameter slightly less than interpunctal distance. Interspaces minutely shagreened. Male metatibia curved in dorsal view. First metatarsomere of male 1.18 times longer than rest of tarsomeres together. Second metatarsomere of male 1.18 times longer than fourth and 1.85 times longer than third. Tarsal claw thin, lacking denticle. Metatibial spur as long as third metatarsomere. Median lobe of aedeagus slightly constricted in front of middle with deep, wide ventral groove. Bottom of groove membranous, with several well developed longitudinal wrinkles. Basal part of median lobe with nearly longitudinal wrinkles laterally. Apex triangular with poorly developed denticle (Figs. 40–42).

Female unknown.

Variability. Specimens from Senglok mountain ridge in Tadzhikistan have elytral punctures as large or larger than interspaces.

Host Plants. *Eremostachys labiosa* (Lopatin 1977, 1984).

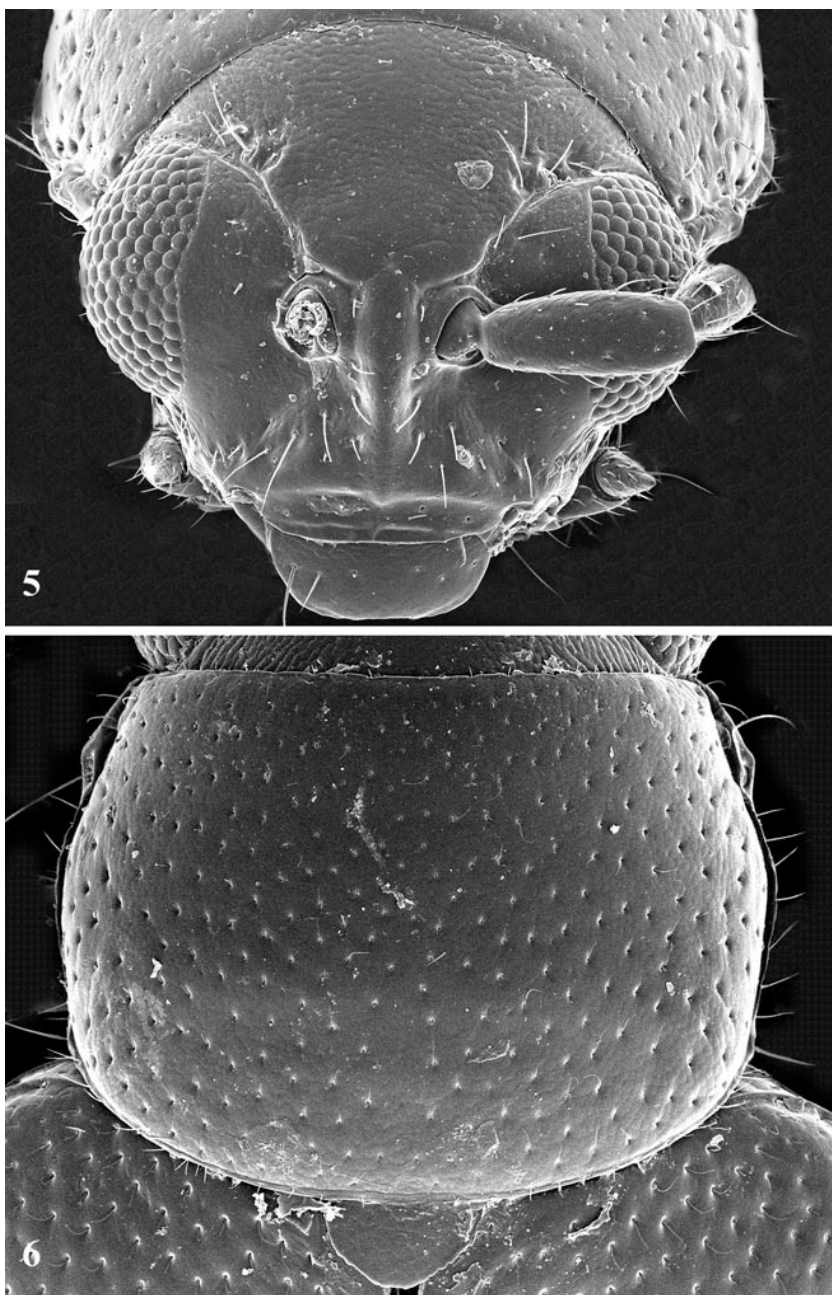
Comments. *Longitarsus hissaricus* is most similar to *L. asperifoliarum*. It was included in Lopatin's Chrysomelidae of Middle Asia and Kazakhstan (1977) as *L. asperifoliarum*. *Longitarsus hissaricus* can be distinguished from *L. asperifoliarum* by the elytral apex being broadly rounded with a well developed angle (Fig. 8), metatibial spur as long as third metatarsomere, and the median lobe of aedeagus with the apex forming almost no denticle and the lateral sides nearly straight (Figs. 40–42).

Type Material. Holotype ♂: **Tadzhikistan**, Hissar mountain ridge, Zimchurud, 1300 m, 31.III.1957, leg. I. Lopatin, feeding on *Eremostachys labiosa* (ZMAS). Paratypes: the same labels as holotype (2♂ ILPC); Tadzhikistan, Kondara, 2000 m, 8.VII.1955, leg. I. Lopatin (♂ ILPC); Takob, 1700 m, 3.V.1986, leg. I. Lopatin (♂ ILPC); Vahsh mountain ridge, near Childara, 12.V.1988, leg. I. Lopatin (♂ ILPC); Senglok mountain ridge, 2000 m, 6.V.1991, leg. A. Konstantinov (3 ♂ AKPC, 3 ♂ USNM); Hissar mountain ridge, Dzhavani, 12.V.1991, leg. A. Konstantinov (3♂ USNM); Hissar mountain ridge, Hodzha-Obigarm, 2500 m, 11.V.1991, leg. A. Konstantinov (3 ♂ AKPC, 3 ♂ USNM); **Afghanistan**, V.1967, leg. Umarov (♂ AKPC).

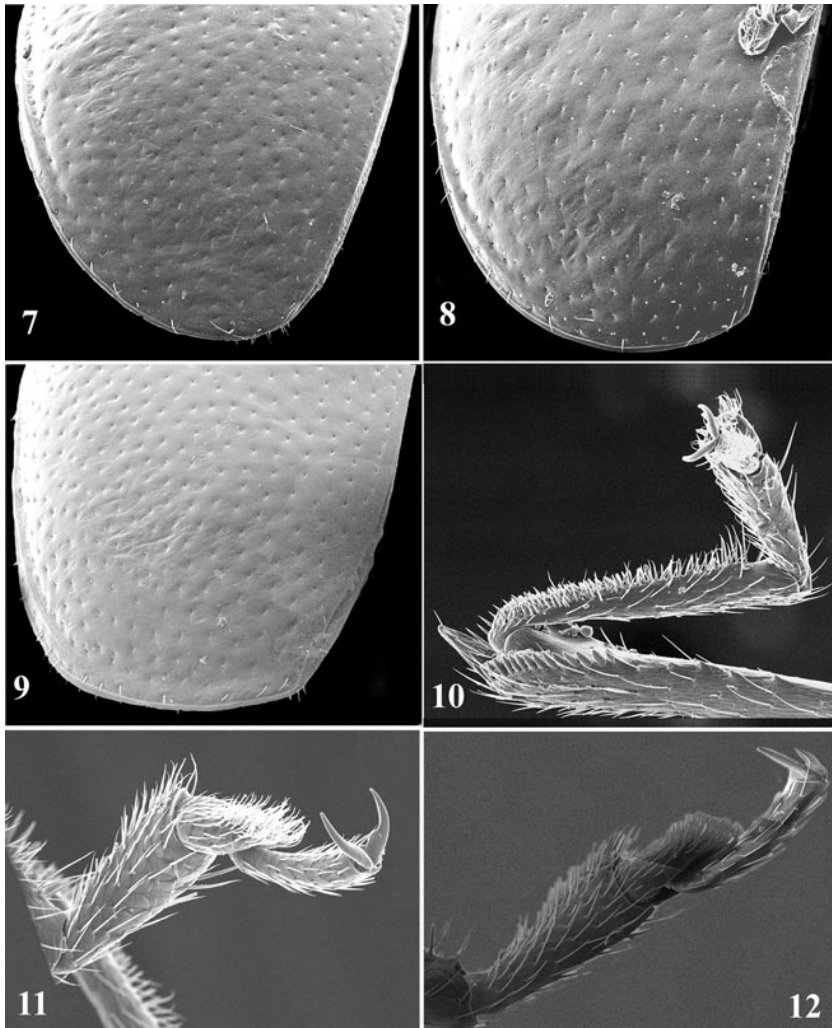
Longitarsus marguzoricus Konstantinov, **new species**

Figs. 5, 6, 9, 12, 14, 19, 20, 24, 28, 43–48

Description. Body slightly convex. Length 1.90–2.22 mm, width 0.96–1.10 mm. Color black with dark bronze reflection. Antenna and leg brown-ferru-



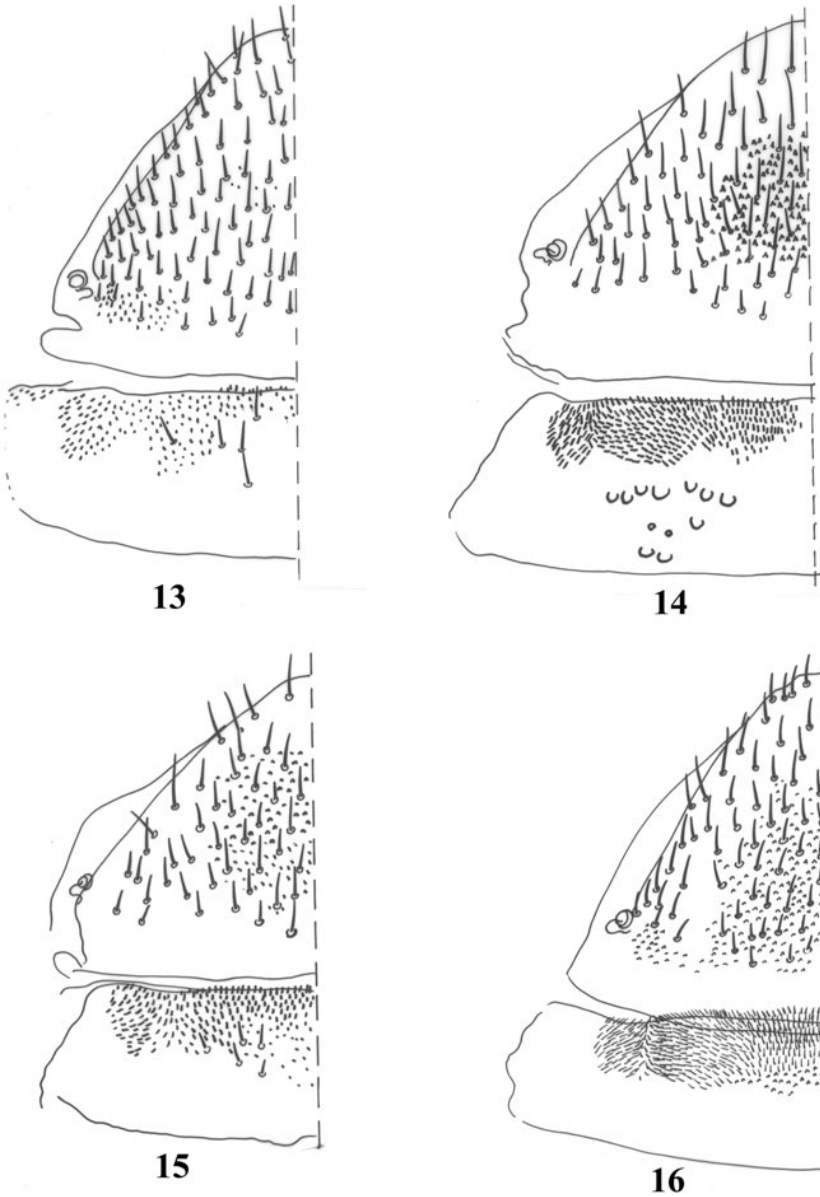
Figs. 5, 6. *Longitarsus marguzoricus* Konstantinov. 5) head, frontal view; 6) pronotum.



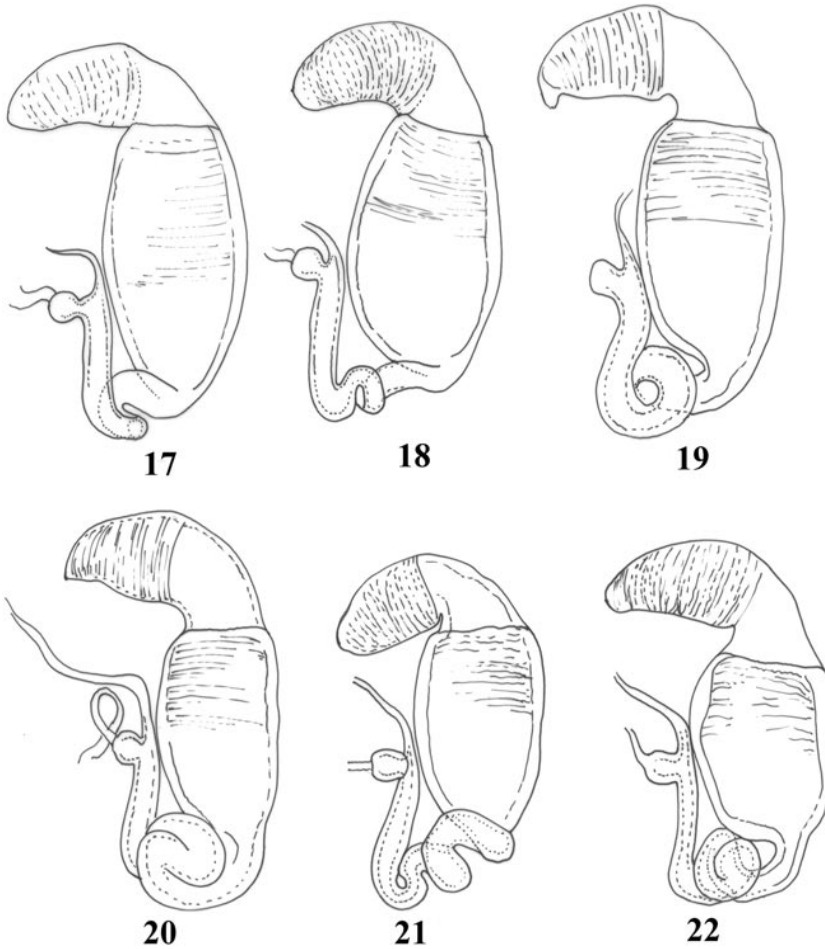
Figs. 7–9. Elytral apex. 7) *Longitarsus asperifoliarum*; 8) *Longitarsus hissaricus* Lopatin; 9) *Longitarsus marguzoricus* Konstantinov.

Figs. 10–12. Metatarsus of male. 10) *Longitarsus asperifoliarum*; 11) *Longitarsus hissaricus* Lopatin; 12) *Longitarsus marguzoricus* Konstantinov.

gineous, base of first antennomere and antennomeres 5–11 slightly darker. Metafemur black with bronze reflection. Pro- and mesofemora dark brown, except apices which are dark yellow. Tibiae dark yellow. Vertex strongly shagreened, with well developed supraorbital puncture above orbital sulcus. Antennal callus poorly developed, as high as vertex, not delineated from vertex by grooves. Surface of antennal callus moderately shiny, lacks any sculpture. Midfrontal and suprafrontal sulci absent. Frontal ridge high and convex in

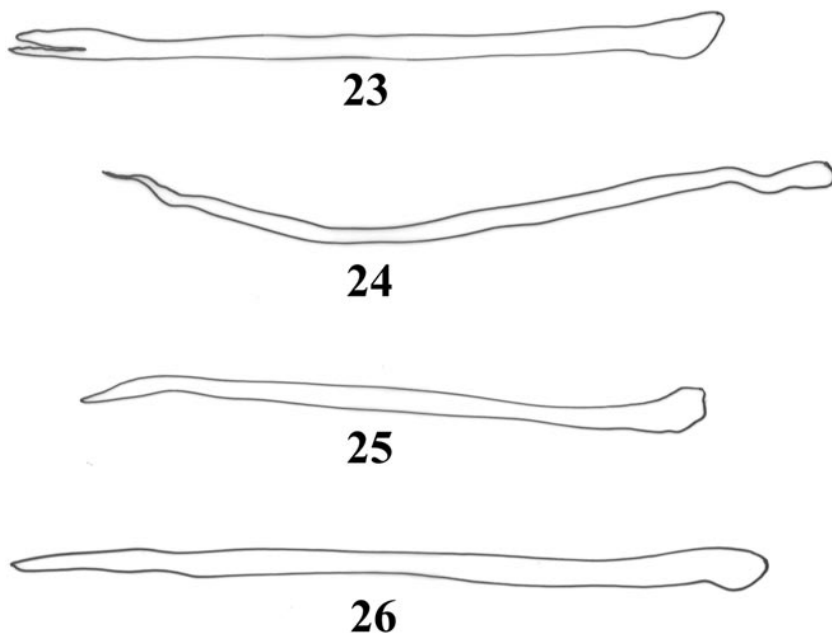


Figs. 13–16. Last abdominal tergites of female. **13)** *Longitarsus asperifoliarum* Weise; **14)** *L. marguzoricus* Konstantinov; **15)** *L. violentoides* Konstantinov; **16)** *L. violentus* Weise.



Figs. 17–22. Spermathecae. **17, 18)** *Longitarsus asperifoliarum* Weise; **19, 20)** *L. marguzoricus* Konstantinov; **21)** *L. violentoides* Konstantinov; **22)** *L. violentus* Weise.

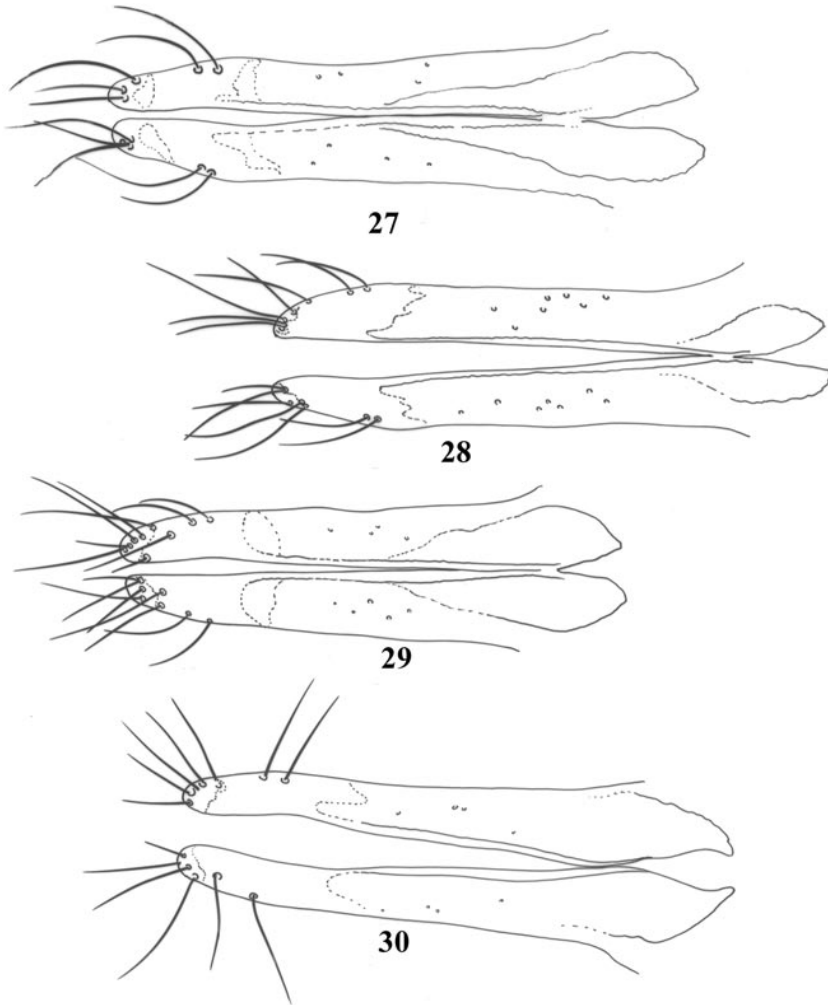
lateral view, moderately narrow, slightly wider posteriorly (Fig. 5), but narrower than in *L. violentus*. Anterofrontal ridge attached to end of frontal ridge, in middle as high as frontal ridge, slightly thicker than frontal ridge. Second antennomere slightly longer than third, as long as fourth. Pronotum length/width ratio 1.34 to 1.41, slightly wider basally. Lateral side convex, maximum width in front of middle. Anterolateral callosity well developed, slightly lower anteriorly, forming acute angle (Fig. 6). Lateral margin narrowly explanated, forming oblique angle before middle, explanations wider apically. Posterolateral callosity low, and wide. Punctures, poorly defined, shallow, moderately large, 1.5 to 2 times larger than interspaces. Interspaces strongly shagreened. Scutellum widely rounded on top. Elytron with well developed humeral callus; maximum width behind middle. Apex almost flat with denticle (Fig. 9). Punc-



Figs. 23–26. Tignum (8th abdominal sternite of female). **23)** *Longitarsus asperifoliarum* Weise; **24)** *L. marguzoricus* Konstantinov; **25)** *L. violentoides* Konstantinov; **26)** *L. violentus* Weise.

tures as large or larger than punctures on pronotum, their diameter 1.5–2.0 times greater than distance between them. Interspaces minutely shagreened. Male metatibia slightly concave in dorsal view. First metatarsomere of male 1.04 times longer than rest of segments together. Second metatarsomere of male nearly as long as fourth and 2 times longer third. Metatibial spur as long as third metatarsomere. Tarsal claw thin, lacking denticle. Median lobe of aedeagus widening anteriorly with deep, wide ventral groove. Bottom of groove membranous, with several well developed longitudinal wrinkles. Apex widely rounded with moderately wide denticle (Fig. 43, 45). Preapical abdominal tergite of female without long setae. Distal half of preapical abdominal tergite densely covered with short setae, basal half with few large pores (Fig. 14). Apical abdominal tergite covered with long setae. Several microtrichia situated in middle of this tergite. Lateral corners of this tergite lack microtrichia (Fig. 14). Receptacle of spermatheca (Figs. 19–20) longer than pump. Inner side of receptacle convex, outer side nearly straight. Vertical part of pump short, well delineated from receptacle and from horizontal part of pump. Spermathecal duct basally pointed in direction opposite to receptacle, forming almost no loop away from receptacle; apically making a few coils. Tignum slender, slightly curved, slightly acute posteriorly (Fig. 24). Vaginal palpus slender, posteriorly straight, broadly rounded at apex (Fig. 28). Apical sclerotization short, obtuse.

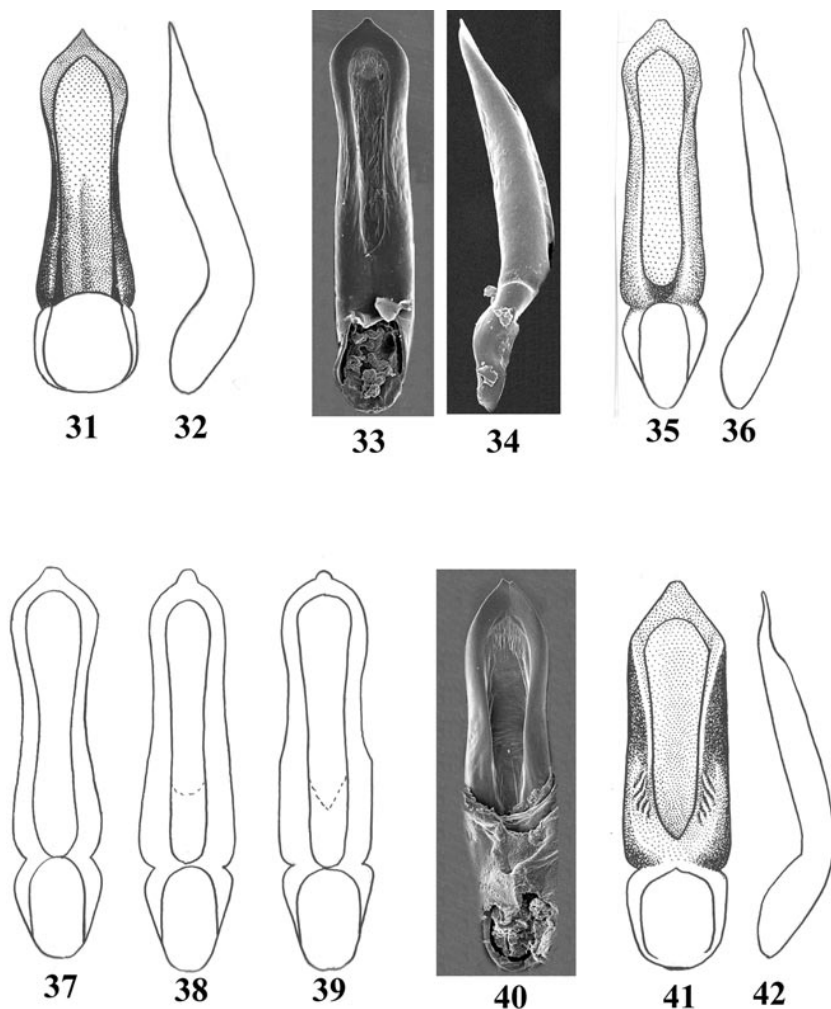
Variability. The median lobe of the aedeagus is a main source of species level characters in *Longitarsus*. It is considered to be a conservative structure



Figs. 27–30. Vaginal palpi. 27) *Longitarsus asperifoliarum* Weise; 28) *L. marguzoricus* Konstantinov; 29) *L. violentoides* Konstantinov; 30) *L. violentus* Weise.

with faint variability. However in *L. marguzoricus* it varies in the shape of the apex which sometimes is more narrow and has narrower denticle (Figs. 43–48).

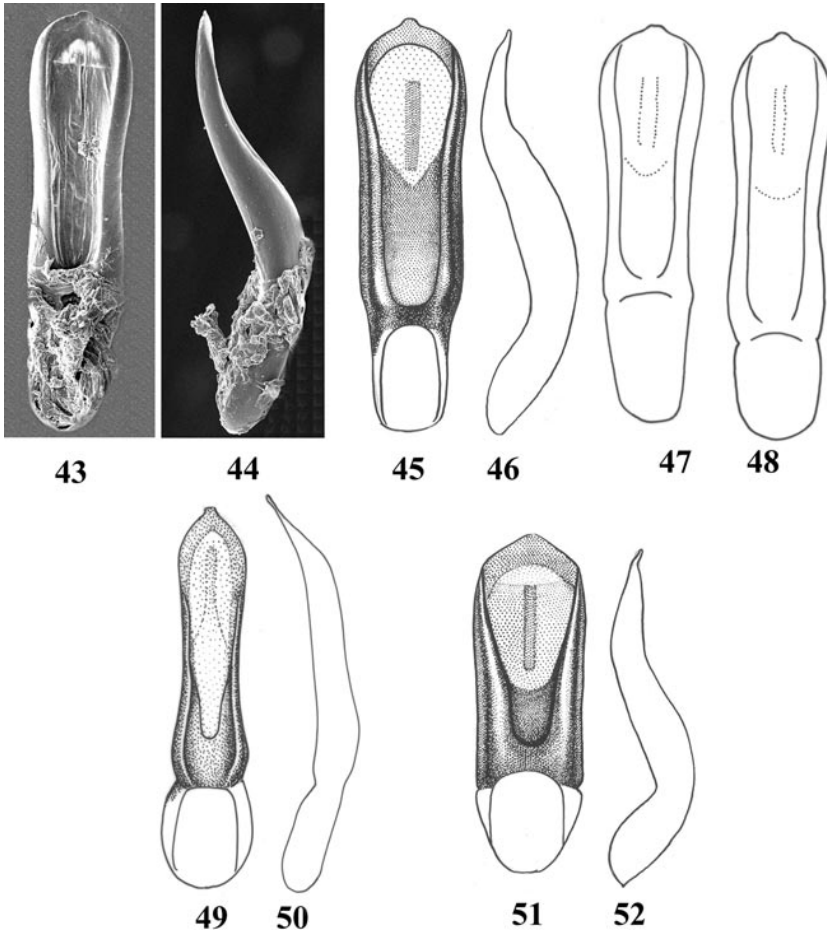
Comments. It is possible that this species represents *L. asperifoliarum* var. *defectus* Jacobson (1893) however we were unable to find any specimens previously identified as this taxon. Jacobson described this variety as being small and without humeral calli. *Longitarsus marguzoricus* is larger than *L. asperifoliarum* and has well developed humeral calli. *Longitarsus marguzoricus* is similar to *L. violentus* Weise and *L. violentoides* sp. nov. It can be separated from *L. violentoides* by the few deep setiferous pores basally on the last ab-



Figs. 31–42. Median lobe of aedeagus. **31, 32)** *Longitarsus afghanicus* Lopatin; **33–39)** *L. asperifoliarum* Weise; **40–42)** *L. hissaricus* Lopatin.

dominal tergite of female (Figs. 14); spermathecal duct making almost no loop away from receptacle, apically forming 2 extremely similar coils (Figs. 19–20); the apex of the median lobe of the aedeagus with wide but well developed denticle (Figs. 43–48); and median lobe of the aedeagus longer, widening anteriorly. From *L. violentus* it can be separated by the larger median lobe, anteriorly widening and the absence of microtrichia on the lateral part of the apical abdominal tergite of female.

Type material. Holotype ♂: **Tadzhikistan**, Zeravshanskii mountain ridge, s. Padrut, Marguzorskie Lakes, 18.V.1991, leg. A. Konstantinov (USNM). Paratypes: the same labels as holotype (6 ♂, 2 ♀ AKPC), (6 ♂, 2 ♀ USNM), (1



Figs. 43–52. Median lobe of aedeagus. **43–48)** *Longitarsus marguzoricus* Konstantinov; **49, 50)** *L. tishechkini* Konstantinov; **51, 52)** *L. violentoides* Konstantinov.

♂ ZMBU), (2 ♂, 5 ♀ ZMAS). Paratypes: the same labels as holotype except for the date (23.V.1991) (3 ♂, 6 ♀ AKPC), (4 ♂, ♀ USNM). Tadzhikistan, Zeravshanskii mountain ridge, Marguzorskie Lakes, Khurdak, 18–19.V. 1967, leg. I. Lopatin, (2 ♂, 2 ♀ USNM).

Longitarsus tishechkini Konstantinov, **new species**

Figs. 49–50

Description. Body slightly convex. Length 1.64–1.80 mm, width 0.84–0.88 mm. Color dark brown with bronze reflection. Antenna and leg brown-ferruginous, base of first antennomere and antennomeres 5–11 slightly darker. Metafemur dark brown with bronze reflection. Bases of pro- and mesofemora light brown. Rest of legs reddish brown. Vertex strongly shagreened, with well

developed supraorbital puncture above orbital sulcus surrounded by smaller punctures. Antennal callus poorly developed, not as high as vertex, not delineated from vertex. Surface of antennal calli moderately shiny, lacking sculpture. Midfrontal and suprafrontal sulci absent. Suprafrontal sulcus shallow. Frontal ridge high, convex in lateral view, moderately narrow. Anterofrontal ridge attached to end of frontal ridge, in middle as high but thinner than frontal ridge between antennal sockets. Second antennomere longer than third, same length as fourth. Pronotum width/length ratio 1.27, slightly wider basally. Lateral side convex, maximum width nearly in middle. Anterolateral callosity well developed, slightly lower anteriorly. Lateral margin forms poorly developed, triangular denticle in front of middle, narrowly explanated, explanations wider apically. Posterolateral callosity poorly developed, low, wide. Punctures round, small, shallow, poorly defined, 1.5–2.0 times smaller than interspaces. Interspaces strongly shagreened. Scutellum widely rounded on top. Elytron with well developed humeral callus, maximum width behind middle. Apex broadly rounded. Punctures much larger than those on pronotum, their diameter 1.5–2.0 times larger than distance between them. Interspaces shiny, minutely shagreened. Male metatibia slightly curved in dorsal view. First metatarsomere of male 0.96 times longer than rest of tarsomeres together. Second metatarsomere of male as long as fourth and 1.57 times longer than third. Tarsal claw thin, lacking denticle. Metatibial spur two times shorter than third metatarsomere. Median lobe of aedeagus slightly constricted in middle, with deep, extremely wide ventral groove. Bottom of groove membranous, with several longitudinal wrinkles. Apex triangular with narrow denticle (Fig. 49).

Female unknown.

Variability. The male paratype has elytra lighter than specimen the holotype.

Comments. *Longitarsus tishechkini* is most similar to *L. asperifoliarum* from which it can be distinguished by its smaller size, shorter metatibial spur, absence of the supracallinal sulci, and extremely wide ventral groove of the median lobe.

Type material. Holotype ♂: **Kazakhstan**, Zaili Alatau, 24.VIII.1989, leg. A. Tishechkin (USNM). Paratype: Kazakhstan, Aksu-Dzhabagly, Aksu river, 22.V.1990, leg. A. Konstantinov (♂ ZMAS).

Longitarsus violentoides Konstantinov, **new species**

Figs. 15, 21, 25, 29, 51, 52

Description. Body slightly convex. Length 1.58 mm, width 0.78 mm. Color black with strong copper reflection. Antenna and leg brown-ferrugineous, first antennomere and antennomeres 6–11 slightly darker. Metafemur black with bronze reflection. Pro- and mesofemora dark brown. Middle of tibiae brown. Vertex strongly shagreened, with single, well developed supraorbital puncture above orbital sulcus. Antennal callus poorly developed, not higher than vertex, not delineated from vertex by grooves. Surface of antennal callus moderately shiny, lacking sculpture. Midfrontal and suprafrontal sulci absent. Frontal ridge high and convex in lateral view, moderately narrow, but wider than in *L. violentus*. Anterofrontal ridge attached to end of frontal ridge, in middle as high and as thick as frontal ridge. Second antennomere slightly longer than third, as long as fourth. Pronotum length/width ratio 1.48, slightly wider basally. Lateral side convex, with maximum width in front of middle. Anterolateral callosity well developed, slightly lower anteriorly. Lateral margin nar-

rowly explanated, explanation wider apically. Posterolateral callosity poorly developed, low, wide. Punctures poorly defined, shallow, moderately small, 1.5 to 2.0 times smaller than interspaces. Interspaces covered with wrinkles. Scutellum widely rounded on top. Elytron with poorly developed humeral callus and maximum width behind middle. Apex broadly rounded. Punctures much larger than those on pronotum, their diameter 1.5–2 times larger than distance between punctures. Interspaces minutely shagreened. Male metatibia straight in dorsal view. First metatarsomere of male 1.10 times longer than rest of segments together. Second metatarsomere of male as long as fourth and 2 times as long as third. Metatibial spur smaller than third metatarsomere. Tarsal claw thin, lacking denticle. Median lobe of aedeagus parallel sided, with deep, wide ventral groove. Bottom of groove membranous, with several well developed longitudinal wrinkles. Apex widely rounded with moderately wide denticle (Figs. 51–52). Preapical abdominal tergite of female with few moderately long setae. Distal half of preapical abdominal tergite sparsely covered with short setae; basal half without pores (Fig. 15). Apical abdominal tergite covered with long setae. Microtrichia situated in middle (Fig. 15). Receptacle of spermatheca (Fig. 21) only slightly longer than pump. Inner side of receptacle convex, outer side nearly straight. Vertical part of pump short, well delineated from receptacle and from horizontal part of pump. Spermathecal duct basally directed opposite to receptacle making almost no loop away from receptacle, apically forming 2 extremely similar coils. Tignum slender, straight, pointed posteriorly (Fig. 25). Vaginal palpus slender, posteriorly slightly curved medially, broadly rounded at apex (Fig. 29). Apical sclerotization obtuse.

Variability. Some specimens have the vertex less shagreened than others.

Comments. *Longitarsus violentoides* is most similar to *L. violentus*. It can be separated by smaller body size; pronotal punctures 1.5–2.0 times smaller than interspaces; poorly developed humeral callus; elytral punctures much larger than pronotal punctures, their diameter 1.5–2.0 times larger than distance between them; male metatibia straight in dorsal view; median lobe of aedeagus more robust with widely rounded apex; spermathecal duct pointed in the direction opposite to receptacle, making 2 nearly identical coils; and lateral parts of the apical abdominal tergite of female lacks of microtrichia.

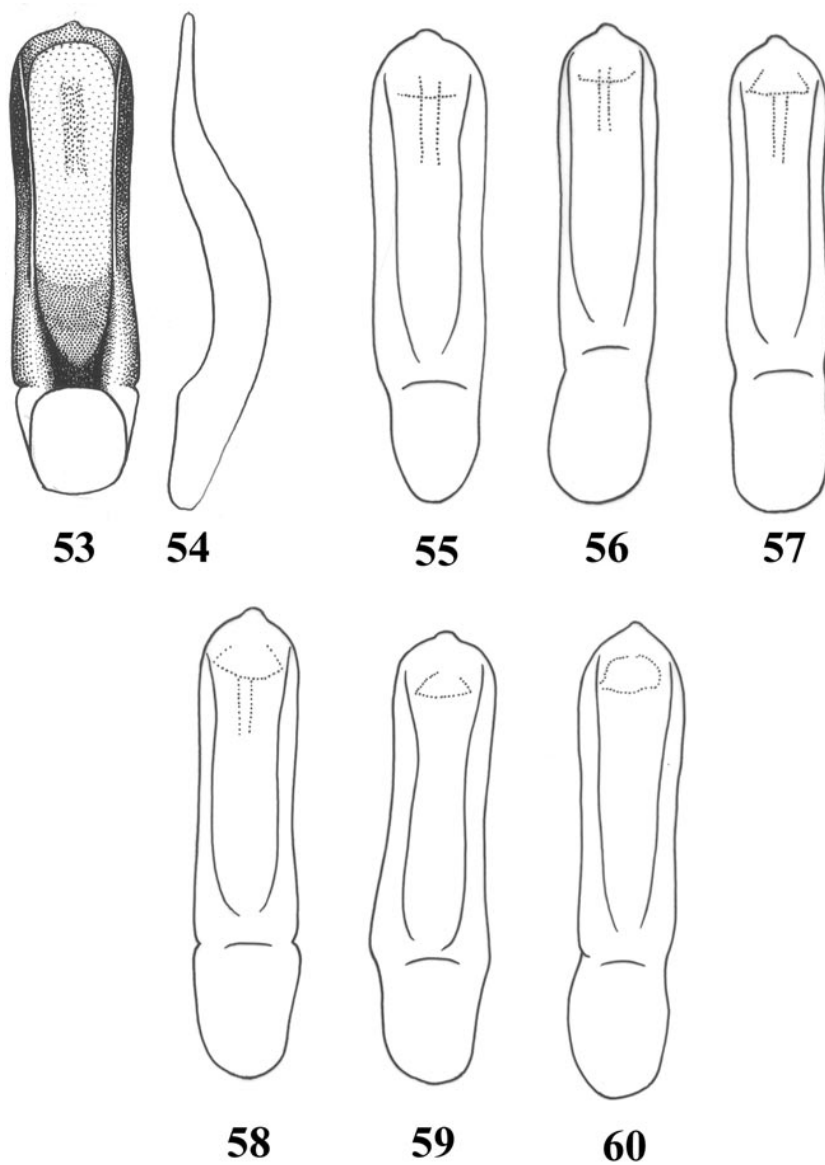
Type Material. Holotype ♂: **Armenia**, Tsahkadzor, alpine meadow, 2500–3200 m, 22.V.1988, leg. A. Konstantinov (USNM). Paratypes: The same data as holotype (♂ AKPC), (♀ ZMAS), (♀ USNM), (♀ IZEA).

Longitarsus violentus Weise

Figs. 16, 22, 26, 30, 53–60

Longitarsus violentus Weise 1882–1993 (1893):1016 (Type locality: Caucasus. Lectotype in ZMHU, designated here). Heikertinger, 1914:258 (figures of ♂ genitalia, distinguishing features, distribution). Lopatin 1977:212, 1984:322 (key, figures of ♂ genitalia, distribution).

Description. Body slightly convex. Length 2.4 mm, width 1.04 mm. Color dark brown with strong bronze reflection. Antenna and leg light brown or reddish-ferrugineous, first antennomere and antennomeres 5–11 slightly darker. Metafemur dark brown with strong bronze reflection. Pro- and mesofemora basally brown, apically reddish brown. Vertex strongly shagreened, with single, well developed supraorbital puncture above orbital sulcus. Antennal callus poorly developed, not higher than vertex, not delineated from vertex by grooves. Surface of antennal calli moderately shiny, lacking sculpture. Mid-



Figs. 53–60. Median lobe of aedeagus of *Longitarsus violentus* Weise. **53, 54)** Svyatogorsk region, Russia; **55)** Samara region, Russia; **56, 57)** Altai, Russia; **58)** Naryn, Uzbekistan; **59)** Kharog, Tadzhikistan; **60)** Baikal Lake, Siberia, Russia.

frontal and suprafrontal sulci absent. Frontal ridge high, convex in lateral view, moderately narrow (distance between antennal sockets slightly greater than diameter of antennal socket). Anterofrontal ridge attached to end of frontal ridge, in middle as high and as thick as frontal ridge. Second antennomere slightly longer than third, as long as fourth. Pronotum length/width ratio 1.42, slightly wider basally. Lateral side slightly convex, with maximum width nearly in middle. Anterolateral callosity well developed, slightly lower anteriorly. Lateral margin narrowly explanated, explanation wider apically. Posterolateral callosity poorly developed, low, wide. Punctures, poorly defined, shallow, moderately large, as large as interspaces. Interspaces strongly shagreened. Scutellum widely rounded on top. Elytron with well developed humeral callus, maximum width behind middle. Apex broadly rounded. Punctures as large as those on pronotum, their diameter slightly smaller than distance between them. Interspaces minutely shagreened. Male metatibia slightly concave in dorsal view. First metatarsomere of male 1.05 times longer than rest of segments together. Second metatarsomere of male 1.17 times longer than fourth and 2 times longer than third. Metatibial spur smaller than third metatarsomere. Tarsal claw thin, lacking denticle. Median lobe of aedeagus parallel sided, with deep, wide ventral groove. Bottom of groove membranous, with several well developed longitudinal wrinkles. Apex more or less flat, with moderately wide denticle (Figs. 53–59). Preapical abdominal tergite of female lacking long setae. Distal half of preapical abdominal tergite densely covered with short setae, basal half without pores (Fig. 16). Apical abdominal tergite covered with long setae. Microtrichia situated in middle and in lateral corners near spiracles (Fig. 16). Receptacle of spermatheca (Fig. 22) only slightly longer than pump. Inner side of receptacle convex, outer side nearly straight. Vertical part of pump short, well delineated from receptacle and from horizontal part of pump. Spermathecal duct basally pointed in same direction as receptacle, making loop away from receptacle forming several coils apically. Tignum slender, straight, pointed posteriorly (Fig. 26). Vaginal palpus slender, posteriorly slightly curved medially, broadly rounded at apex (Fig. 30). Apical sclerotization acute.

Variability. Specimens from Ural region have thin and shallow but quite visible supracallinal sulcus. In specimens from Kharog Botanical Garden (Tadzhikistan) antennal calli are not separated from vertex, but their surface is slightly raised above vertex; and interspaces of elytra covered with tiny, poorly developed punctures. Specimens from Naryn have shiny vertex lacking any wrinkles or punctures. Specimens from Altai have punctures on pronotum much smaller than those on elytra. A few specimens from Irkutsk region have less developed humeral callus. Median lobe is quite variable in this species. The shape of ventral groove varies from almost parallel sided in middle and abruptly narrowing at base to gradually narrowing basally (Figs. 53, 55–60). The shape of the apex varies in the same way as in *L. marguzoricus*.

Comments. In the original description Weise compared this species with his previously described *L. asperifoliarum* and mentioned that he had at least 2 specimens, one of which was male. Heikertinger studied several specimens of *L. violentus* from Caucasus, Turkmenia, Kirgizia, Kazakhstan, and Mongolia, including the syntypes (Heikertinger 1914:259). He provided figures of the male genitalia and discussed the differences between this species and *L. asperifoliarum*.

Longitarsus violentus can be separated from most of the species of the *asperifoliarum* group by the presence of lateral microtrichia on the last abdom-

inal tergite of female (Fig. 16) and by the slender median lobe of aedeagus having a less convex apical part in lateral view (Figs. 53–60).

Type material. Lectotype ♀: “Kaukas, Leder, violentus Ws.; ex. coll. Weise, Zool. Mus. Berlin;” Lectotypus *Long. violentus* design. I. Lopatin (ZMHU).

Material. Georgia: East Georgia, Vashlavankii Reserve, 14.V.1975, leg. I. Lopatin (2 ♂ ILPC). **Kazakhstan:** Temir u. Ural region, ur. Kuzha-Tugai. 13.VI.1908, leg. D. Borodin and B. Uvarov (♂ ZMAS). Talskii Alatau, Aksu-Dzhabagly, 19.V.1990, leg. A. Konstantinov (♂ AKPC). **Mongolia:** Central Aimak, 15 km NE Mungen Mor'ta, Kerulen river, 12-21.VI.1979, leg. L. Medvedev & N. Voronova (♂ USNM); Central Aimak, Ulan Bator, 1500–1800 m, 22-23.VII.1965, leg. Z. Kaszab, det. I. Lopatin (♂ USNM); Central Aimak, northern slope of Bogdoul, near Ulan Bator, 29.VI.1967, leg. I. Kerzhner, det. I. Lopatin (♂ USNM); same data as previous specimen except 14.VII.1967, leg. Emel'yanov, det. I. Lopatin (♀ USNM); Central Aimak, 10 km W Somon Delgerchaan, 1250 m, 24.VIII. 1965, leg. Z. Kaszab (2♀ USNM). **Russia:** or. Samara, litus dexter Volga, 2.XI.1929, leg. A. Lubischew (♂ ZMAS). Svyatogorsk, Stalinsk. region (Donetsk region), 10.VI.1941, leg. A. Lubischew (♂ ZMAS). Altai, Kosh-Agach, 18.VI.1989, leg. S. Saluk (3 ♂ AKPC). Altai, Ongudai, 4.VI.1989, leg. S. Saluk (♂ AKPC). Irkutsk region, Baikal Lake, Sagan Zoba, 09.VII.1998, leg. A. Konstantinov (25♂, 26 ♀ USNM). Irkutsk region, Ust'Orda territory, between Tikhonovka and Bokhan, 06.VII.1998, leg. A. Konstantinov (2♂, 4♀ USNM). Novosibirsk region, Karasuk territory, 29.VI.1998, leg. A. Konstantinov (3♂, 3♀ USNM). **Uzbekistan:** Middle part of Naryn River, foothills of Naryn ridge, 11.VII.1966, leg. V. F. Palij (2 ♂ AKPC).

Key to *Longitarsus asperifoliarum* Species Group

- 1(2) Pronotal surface strongly shagreened, dull *L. tishechkini* Konstantinov
- 1' Pronotal surface weakly shagreened, shiny 2
- 2(1) First antennomere with base darker than apex 3
- 2' First antennomere with base as dark as apex 6
- 3(2) Tibiae yellow. Lateral margin of pronotum without denticle in front of middle *L. afghanicus* Lopatin
- 3' Tibiae light brown or reddish ferrugineous. Lateral margin of pronotum with denticle in front of middle 4
- 4(3) Last abdominal tergite of female with lateral microtrichia (Fig. 16). Median lobe of aedeagus slender, apical part less convex in lateral view (Figs. 53–60) *L. violentus* Weise
- 4' Last abdominal tergite of female without lateral microtrichia (Figs. 14–15). Median lobe of aedeagus more robust, apical part more convex in lateral view (Figs. 43, 45, 51) 5
- 5(4) Last abdominal tergite of female with few deep setiferous pores basally (Fig. 14). Spermathecal duct basally pointed in direction opposite to receptacle making almost no loop away from receptacle, apically forming 2 extremely similar coils (Figs. 19–20). Apex of median lobe of aedeagus with wide but well developed denticle (Figs. 43, 45, 47, 48) *L. marguzoricus* Konstantinov
- 5' Last abdominal tergite of female without deep setiferous pores basally (Fig. 15). Spermathecal duct basally pointed in direction of receptacle making loop away from receptacle, apically forming irregular coils (Fig.

- 21). Apex of median lobe of aedeagus with poorly developed denticle (Fig. 51). *L. violentoides* Konstantinov
- 6(1) Elytral apex broadly rounded with well developed angle (Fig. 8). Metatibial spur as long as third metatarsomere. Median lobe of aedeagus with apex forming almost no denticle, and lateral sides nearly straight (Figs. 40, 41) *L. hissaricus* Lopatin
- 6' Elytral apex narrowly rounded without well developed angle (Fig. 7). Metatibial spur smaller than third metatarsomere. Median lobe of aedeagus with apex forming moderately well developed denticle and lateral sides slightly constricted nearly in middle (Figs. 33, 35, 37–39)
..... *L. asperifoliarum* Weise

Acknowledgments

We thank F. Hieke (ZMHU), M. Kalashyan and M. Mardzhanyan (IZEA), B. Korotyaev (ZMAS), O. Merkl (HNHM), and A. Pisanenko (ZMBU) for the opportunity to study material in their care. We are also grateful to J. Krysan (Louisville, KY), J. Brown, and A. L. Norrbom (Systematic Entomology Laboratory) for reviewing this manuscript and providing valuable suggestions.

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(Received 18 May 1999; accepted 25 August 1999)